

REMARKS

Applicants submit this preliminary amendment and response for the Examiner's consideration. Entry of the foregoing preliminary amendment and reconsideration of the amended application in view of the following remarks are respectfully requested.

A. Status Of The Claims

Claims 1-5 and 7-15 were presented for examination. By this preliminary amendment, claims 1-5 and 7-15 have been cancelled without prejudice, and new claims 16-24 have been added to more clearly set forth the present invention. Thus, claims 16-24 are pending in the application. The Examiner's rejections are traversed below.

B. Response to Rejections

1. Rejections Under 35 U.S.C. § 112, 1st Paragraph

The Examiner objected to the specification under 35 U.S.C. § 112, 1st Paragraph, as failing to support the invention as claimed. In particular, the Examiner objected to the language at page 5, lines 24-28, of the specification:

If this scanning operating according to the program is carried out at a *sufficiently* high frequency, the user's eyes will see a stationary image, rather than an image of a moving point, on the patient's body.

Applicant respectfully disagrees with the Examiner's position as to the insufficiency of this statement. Indeed, the statement, when read in the context of the rest of the specification, clearly teaches that the light beam can, for example, be projected onto the patient's body in a manner so as to trace the outline of the target region. Moreover, when this tracing operation is performed at a sufficiently high speed (*i.e.*, movement of the incident light on the patient via the optical system), then the traced outline will appear to a user as a substantially stationary image.

For example, a light beam, such as would be produced by a laser, that is quickly moved between two points produces the illusion of a stationary line between the two points. All that is required is that the "scanning operation" (*i.e.*, movement of the light beam projected on the patient) be carried out a speed that results in the illusion of a stationary image. This is clearly taught by the specification, and Applicant respectfully requests that this rejection be withdrawn by the Examiner.

Moreover, those claims that are directed to this limitation, are also sufficiently clear under 35 U.S.C. § 112, 1st and 2nd Paragraphs, for the same reasons.

2. Claim Rejections Under 35 U.S.C. § 102(b)

Claims 1, 3-5, and 8-15 were rejected under 35 U.S.C. § 102(b) as being anticipated by *Trotel* (U.S. Patent No. 5,080,100; hereinafter referred to as *Trotel*). Each of those claims have been cancelled without prejudice. Moreover, new claims 16-24 have been presented that more clearly set forth the nature of the present invention. These claims each define an invention that is patentably distinct from the teachings of the *Trotel* reference.

Trotel is directed to an apparatus that provides an x-ray solution that is quite different from that of the present invention as claimed. In particular, *Trotel* discloses the use of a light scanning device (37 in Figure 1) that must be used in conjunction with an image receiver (38 in Figure 1), to define an target region for treatment by an x-ray signal. Specifically, the light scanning device 37 is used to project light towards specific points along a patient's body that correspond with the treatment area. The image receiver (38 in Figure 1) is then used to detect the location of the specific light points on the body. See col. 7, ll. 9-11. This information, together with the "geometrical data on the orientation and position of the beam 53 and of the

receiver 38” (col. 6, ll. 10-14) is recorded (see col. 7, ll. 17-19), and then used to reposition the patient’s body position with respect to the x-radiation source 36 and thereafter treat the patient with x-rays. col. 36, line 35 et seq.

Several of the teachings of *Trotel* are significant with respect to its differences from the present invention. First, *Trotel* specifically emphasizes that its approach is used so that a “diaphragm” or other similar physical focusing device is not needed:

It is thus possible to achieve the function of a delineator without having to make a diaphragm as in the prior art. (col. 5, ll. 57-59 emphasis added).

Consequently, nowhere does *Trotel* indicate or suggest that the light scanning device 37 be used to provide a visual indicator that can be then be used to provide a suitable collimator or focusing arrangement for the therapeutic x-ray signal; in fact, this is precisely what *Trotel* seeks to avoid. Secondly, nowhere does *Trotel* teach or suggest that the light scanning device 37 be used to project anything other than specific data points on the patient for detection by the image receiver 38. In particular, nowhere does it teach that the light scanning device 37 be used to project any type of “visual” indicator for use by the operator, nor does it teach that the device 37 be used to project the image of a stationary line, or similar type of visual indicator on the patient’s body.

Applicant respectfully submits that claims 16-24 are not anticipated by *Trotel*.

With respect to new independent claims 16 and 20, Applicant respectfully submits that the subject matter claimed therein patentably distinguishes over *Trotel*. For example, the claims as amended define an apparatus that provides the function of “visually marking an area on a patient” for x-ray treatment. In contrast, *Trotel* utilizes a light source 37 that projects light points for detection by an image receiver device 38, *i.e.*, the data points are not generated, nor are they intended to provide a “visual” indication as to the location of the target area. Instead, the light points of *Trotel* must be detected by the image receiver 38, and that location data is then

combined with the information relating to the coordinates of the light source 54, etc., to then calculate and determine the location of the target region, whereby an appropriate x-ray signal can then be generated. Indeed, *Trotel* emphasizes that one of the drawbacks of the prior art is that “an operator [must be] near the patient to observe the light traces projected by the telemeter.” (col. 2, ll. 65-67, emphasis added). Clearly, the intent of *Trotel* was to avoid the use of any “visual indicator” as is now claimed.

Further, the claims of the instant application specifically require that the beam of “visible light” be manipulated so as to provide “a visual indicator on the patient” that can then be used to “shape” the therapeutic x-ray beam so that it reaches only that portion of the patient in accordance with the visual indicator. Again, as was emphasized above, not only does *Trotel* not teach this capability or need for a visual indicator, it also teaches away from the need for a collimator, diaphragm or similar “shaping” device that is provided in accordance with the visual indicator. Instead, *Trotel* utilizes the data obtained from the image receiver 38, in combination with other data, and then the manipulates the patient’s position with respect to the radiation source.

Finally, nowhere does *Trotel* teach or suggest the use of a light source to provide a visual indicator having the illusion of a stationary image. Indeed, *Trotel* only teaches the ability to project individual data points in the form of a plurality of discrete light spots, which individually provide no indication as to the location of the target region.

Clearly, *Trotel* does not show or suggest the arrangement of an apparatus or method for visually marking an area for treatment by an x-ray signal, as is set forth by independent claims 16 and 20. As stated by the Federal Circuit:

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim*.

Lindermann Maschinenfabrik GMBH v. American Hoist and Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added). This the Examiner has not shown. Thus, Applicant respectfully submits that new independent claims 16 and 20 patentably distinguish over *Trotel*, and withdrawal of this rejection is respectfully requested.

Finally, dependent claims 17-19, and 21-24, which dependent directly or indirectly from independent claims 16 and 20 respectfully and therefore incorporate each of the limitations of those claims, are also patentably distinct over the teachings of *Trotel*. Moreover, each of those claims include additional limitations which are not shown or suggested by the prior art. For example, dependent claim 18 requires the use of a combination of mirrors for providing the “visual indicator” noted above. Again, nowhere does *Trotel* teach or suggest the generation of such a visual indicator, with mirrors or otherwise. Similarly, dependent claim 19 requires that the visual indicator have the appearance of a line that is disposed substantially about the periphery of the target region. Again, *Trotel* doesn’t teach the use of a visual indicator to designate a target region, and, at best, only teaches the use of discrete light points. Thus, Applicant respectfully submits that each of those dependent claims are patentably distinct over the teachings of *Trotel*.

C. Conclusion

For all the reasons advanced above, Applicant respectfully submits that the application is in condition for allowance and that action is earnestly solicited. In the event that the Examiner finds any remaining impediment to a prompt allowance of this application that could be clarified

in a telephonic interview, the Examiner is respectfully requested to initiate the same with the undersigned attorney.

Dated this 7th day of February, 2000.

Respectfully submitted,



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